

CABG SSI IMPROVEMENT TEAM

RECOMMENDATIONS TO REDUCE STERNAL WOUND INFECTION

BY: DONNA BONALDI-SWAN RN



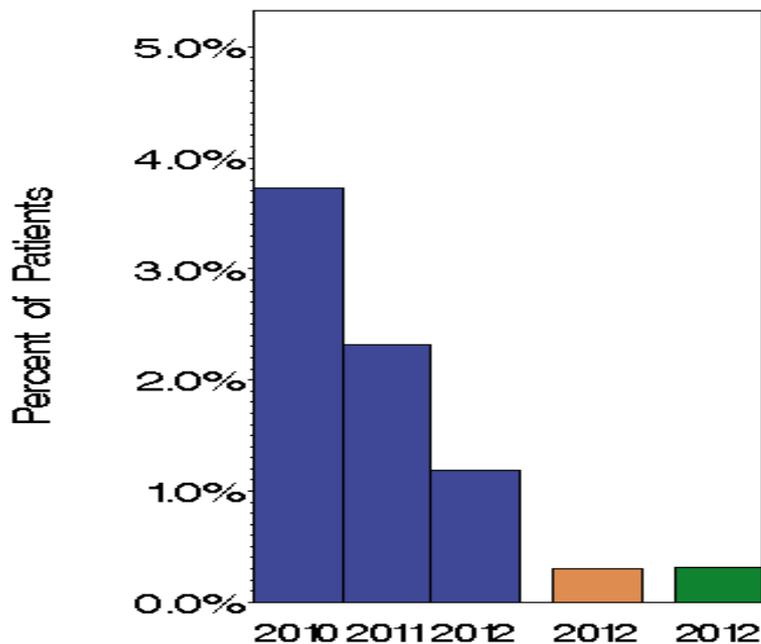
**HENRY FORD
MACOMB HOSPITALS**

WE HAVE A PROBLEM

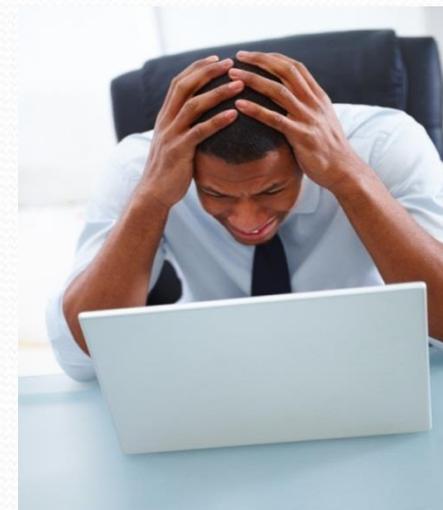
SOME IMPROVEMENT / NOT ENOUGH

Deep Sternal Infx/Mediastinitis

Observed rate



Participant Like STS



DEVELOPED A TASK FORCE

DIVIDED INTO 3 TEAM:

PRE-OP, INTRA -OP, POST-OP



ROOT CAUSE ANALYSIS: NO COMMON

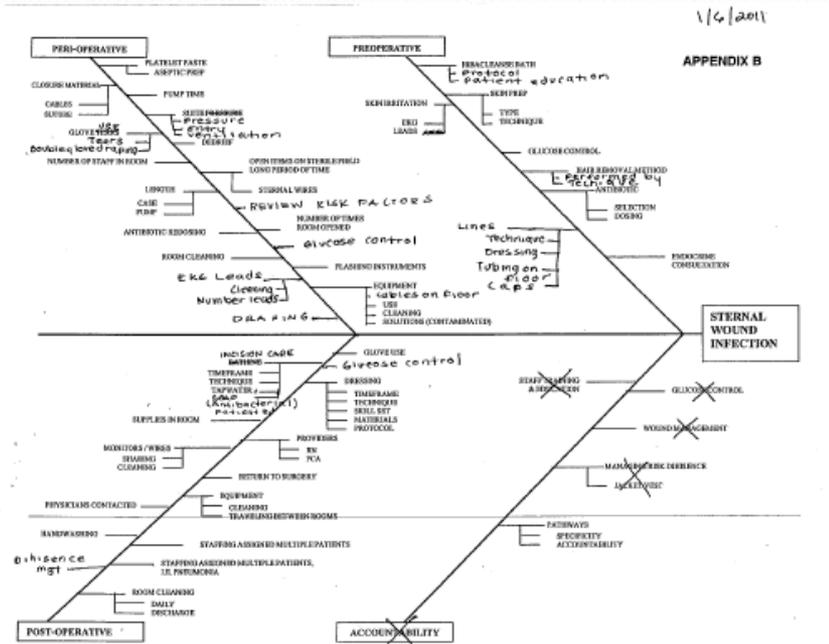
SOURCE OF INFECTION/ LOOK AT THE
WHOLE PROCESS

QUALITY IMPROVEMENT PROJECT/ COMMITTEE MEMBERS

:

- 1). Infectious Disease: Dr. Husain, Stephanie Borngesser NP
Danette Hayman RN
- 2). OR staff: Annabelle Clayton RN, Judy Caretti-Rourke RN,
Karen Pekar RN
- 3). CVS: Dr. Harrington, Dr. Gallick, Ryan Ramales PA, Shelly
Klein PA, Nancy Dalton RN, Donna Bonaldi-Swan RN
- 4). Unit 25: Manager: Pam Isca, Corinne Naas educator,
RN staff from the unit.
- 5). Environmental services
- 6). Material processing/ OR

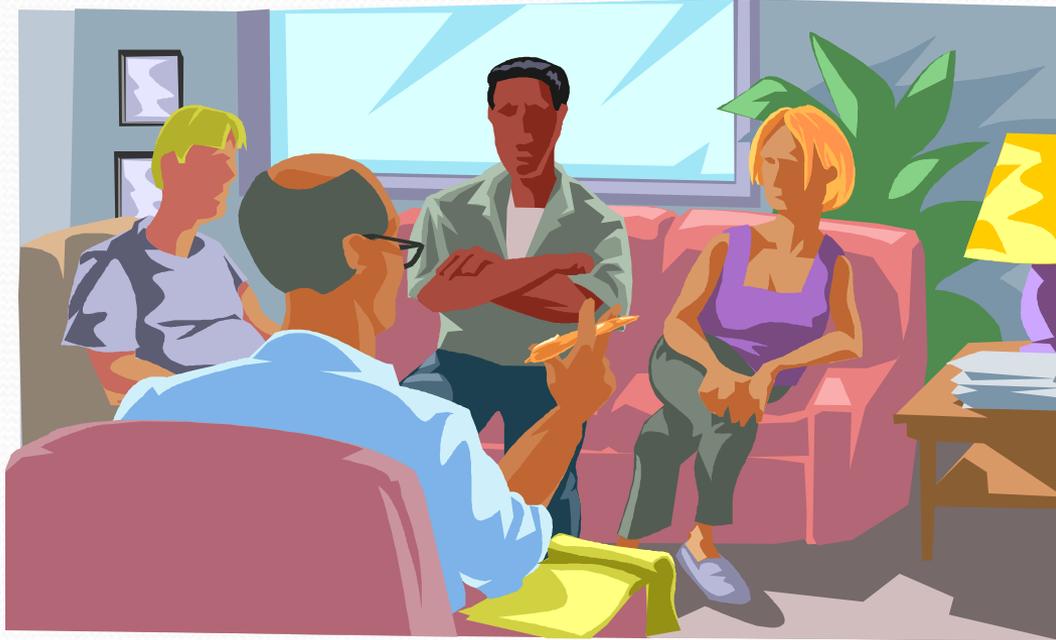
IDENTIFYING THE PROBLEM



- BRAINSTORMED
- IDENTIFIED MANY AREA NEEDING IMPROVEMENT:
- LOOKED AT BEST PRACTICE TO MAKE PLANS

USING A FISHBONE GRAPH

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PRE OP TEAM

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IDENTIFIED MANY ISSUES

- HIBICLENS WAS PROVIDED TO PATIENTS WITH **NO** STANDARDIZED WRITTEN PROTOCOL ONLY VERBAL INSTRUCTION WERE GIVEN.
- SHOWERS WERE ORDERED THE NIGHT BEFORE AND MORNING OF SURGERY
- HAIR CLIPPING DONE IN PRE-OP AREA,(**AFTER THE SHOWER**)
- HOSPITAL WIDE INITIATIVE PATIENTS RECEIVE HANDOUTS PRIOR TO SURGERY THAT REVIEWED HOW TO PREVENT SURGICAL SITE INFECTION AND LINE(CENTRAL OR PERIPHERAL) INFECTION, THE NURSE THEN INITIAL THAT THE PATIENT RECEIVED THE INFORMATION.(DID THEY READ THIS INFORMATION???)
- REVIEWED PROTOCOLS FOR LINE INSERTION/ HOSPITAL WIDE PROTOCOL/ YEARLY NURSING MANDATED EDUCATION.
- WAS ANTIBIOTIC DOSING APPROPRIATE (STANDARD DOSING NOT WEIGHT BASED)
- ENDOCRINOLOGY CONSULT PRE-OP FOR DIABETIC MANAGEMENT
- HAND WASHING ! HAND WASHING! HAND WASHING! HOSPITAL WIDE INITIATIVE

PLAN OF ACTION: PRE-OP



- Showers 2 to 3 nights before surgery using Hibiclens,
- Morning of surgery after shave prep is done bed bath with CHG wipes
- Dosing of pre-op Cefazolin according to weight <60Kg =1gm, 60-80Kg 2gm, >80Kg 3gm, and infused within 1 hour of surgery
- Education of staff and patients: hibiclens showers and CHG bed bath
- All Patients have pre-op nasal culture: started in September 2013
 - In-house treated with mupirocin/ discontinue if negative or if positive continue for a total of 5 days of bid dosing.
 - elective cases treated if positive result.
- NEW PROTOCOL: started 11/2013 oral prep-tootbrush and swabs -precidex
- Use of surgical safety checklist to insure best practice



Intra op Team

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AREAS REVIEWED BY INTA OP TEAM

- ENVIRONMENTAL SERVICE LOOKING AT AIR EXCHANGE IN OR.
- MATERIAL PROCESSING REVIEWED PROCESS OF STERILIZING.
- TRAFFIC FLOW OF THE OR ROOM was monitored
- HOUSE KEEPING AND HOW THE ROOM WAS CLEANED/ CLEANING PRODUCTS USED.
- LOOKED AT ANY NEW PRODUCT THAT MAY HAVE BEEN USED. (SUTURES, CLOSURE DEVICES ECT).
- INFECTIOUS DISEASE PHYSICIAN AND NP OBSERVED OPERATION FROM PRE-OP TO ACTUAL OPERATION AND ROOM CLEANING IMMEDIATELY AFTER THE CASE; RESULTS REVIEWED IN MEETING.

INTRA OP TEAM PLAN OF ACTION;

PREP OF PATIENT ON THE OR TABLE BY THE PA's

TRAFFIC LIMITED IN OR ROOM

CLEANSING OF THE ROOM /EQUIPMENT /NEW PROTOCOL WRITTEN

VENTILATION IN THE ROOM AND ROOM TEMPERATURE

USING DISPOSIBLE TELEMETRY WIRE AND PLACEMENT OF LEADS

NASAL PREP WITH PROVIDINE IODINE (11/2013)

CONTINUED USE OF SURGICAL CHECKLIST

1. ANTIBIOTIC WT BASE DOSING, APPROPRIATE TIMING PRIOR TO INCISION AND REDOSING FOR CASES OVER 4HOURS
2. GLUCOSE CONTROL



POST OP TEAM

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PROBLEM IDENTIFIED

- SURGICAL ICU AND STEP DOWN (NOT DEDICATED UNIT)
- TELEMETRY WIRES WERE CLEANED BETWEEN PATIENTS AND REUSED.
- PORTABLE TELEMETRY BOXES WERE BEING CLEANED AND SHARED.
- 2 DIFFERENT PROTOCOL FOR DRESSING CHANGES FOR 2 DIFFERENT SURGEONS
- DRESSING CHANGES DONE BY (PATIENT CARE TECH VS RN),
- ANTIOTBIOTIC DOSING POSTOP (PATIENT RECEIVED 2 DOSES OF CEFAZOLIN AND 1 DOSE OF VANCOMYCIN, FOR PCN ALLERGY)
- PATIENT ALLOWED TO SHOWER AFTER 48 HOURS, IF CHEST TUBES WERE DISCONTINUED.
- POST OP EDUCATION OF WOUND CARE FOR DISCHARGE WAS REVIEWED.

POST-OP TEAM RECOMMENDATIONS AND CHANGES

- Dedicated 8 rooms for Cardiovascular surgery patients (Combined ICU/ Stepdown so patients stay in same room their entire stay).
- Cleaning Rooms, few hours prior to patient entering room, using ultraviolet light to sterilize room.
- Standardize dressing change and wound care/ new protocol written, disposable lead wires for telemetry.
- Glycemic Control (all patients have endocrine consult)
- New change in policy: all ICU and step down patients have daily CHG bed bath or hibiclens shower if ambulatory (10/2013)
- Early ambulation/ C&DB, PT consult on all patients to work on exercise program

DISCHARGE PATIENT

- Patient education (Clinical Coordinator or PA's)
 - Review of proper wound management at home
 - Review signs and symptoms of infection
 - Temperatures to be taken 2 times a day
 - Follow up Phone calls/ patient resource person
 - Surgeon following patient 1 to 2 weeks depending on risk factors.

IMPLEMENTATION OF THE ACTION PLAN: WHO WILL BE RESPONSIBLE AND IDENTIFY A TIMELINE

Date: June 6, 2011

STERNAL WOUND INFECTION TEAM: Preoperative Skin Prep

Lead Facilitator: Danette Hayman

Process Owner: Outpatients PA & NP's



ACTION PLAN

Action	Primary Responsibility	Complete by
Review and improve patient educational approach	PA/Clinical Coordinators/Facilitator	6/14/2011
Address patient variables in process flow	PA/Clinical Coordinators/Inpatient Nurse managers	6/17/2011
Educate staff on process flow	PA/Clinical Coordinators, Pre-op and Inpatient Nurse managers	6/24/2011
Add CHG clothes to process flow	Facilitator	6/17/2011
Begin use of CHG product	Pre-op manager	6/27/2011
Study impact of actions	Coordinating team	7/8/2011

BARRIERS

Limited time in pre-operative process

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MADE A TOOL TO COLLECT DATA AND MONITOR ACTION PLAN add quality measures to WHO surgical checklist

<input type="checkbox"/> SURGICAL SAFETY CHECKLIST FINAL VERIFICATION & DEBRIEFING		Patient label	DOS:
<div style="border: 1px solid black; padding: 5px; background-color: #e0e0e0;"> PRE-CARDIOTHORACIC VERIFICATION/SIGN IN PHASE LOCATION: Pre-Op <small>Hand off communication between pre-op & OR/CRNA</small> </div>			
<input type="checkbox"/> PT identified using two patient identifiers <input type="checkbox"/> Inpatient meds Suspended <input type="checkbox"/> Allergies: <input type="checkbox"/> yes <input type="checkbox"/> no Latex: <input type="checkbox"/> yes <input type="checkbox"/> no List: _____ <input type="checkbox"/> Seen by anesthesiologist <input type="checkbox"/> Site marked/ as needed H&P <input type="checkbox"/> In computer <input type="checkbox"/> Complete Consent Signed: <input type="checkbox"/> Patient, <input type="checkbox"/> Surgeon Labs: <input type="checkbox"/> Complete (CBC, CMP, Coags, HgA1c) <input type="checkbox"/> Type and Screen <input type="checkbox"/> ABO 2 nd draw needed <input type="checkbox"/> Type and Cross _____ units / _____ units platelets <input type="checkbox"/> Autologous Blood Available <input type="checkbox"/> CWA	Nurses Aide/RN Documentation Height _____ Weight: _____ kg NPO _____ Temp _____ Heart rate _____ B/P: RT _____ LT _____ Resp _____ <input type="checkbox"/> Pulse OX _____ Telemetry rhythm _____ Pre op showers done <input type="checkbox"/> 1 st night <input type="checkbox"/> 2 nd night <input type="checkbox"/> Hair removal completed <input type="checkbox"/> CHG: bed bath completed <input type="checkbox"/> BHCG: negative, positive, Hyster, tubal (circle one) <input type="checkbox"/> POCT: Glucose _____ Insulin _____ Comments/ Special Needs: _____ _____ _____ Pre-Op RN signature: _____		
<div style="border: 1px solid black; padding: 5px; background-color: #e0e0e0;"> POST-PROCEDURE VERIFICATION LOCATION: SICU </div>			
Procedure _____ on pump, _____ off pump- Surgeon Hx _____ Home meds _____ Drips _____ Blood products # _____ RBC, _____ FFP, _____ platelets, _____ Cryo _____ Lines _____ Vent Settings _____ Pacemaker: A: _____ V: _____ Setting _____ Telemetry/cardiac rhythm: _____ ABP _____ HR _____ PAP _____ CO _____ CI _____ CVP _____ Temp _____ HGB _____ HCT _____ K+ _____ BS _____ Urine output _____ Admission Order/Post-op orders entered _____ post-op note _____ MDA note _____ Significant Events/Note: _____ Signature: CRNA giving report _____			

Anesthesia Pre-Procedure:

Safety Checklist completed

Patient at risk for difficult airway/ aspiration

No _____ equipment/assistance available

Beta Blocker within 24 hours of incision

Glycemic Control

Anesthesia Post-procedure:

Crystalloid: _____

Colloid: _____

EBL: _____ Output: _____

Special meds/ Drips _____

Other: _____ CRNA Initials _____

Blood Sugars: Highest level _____ next measured _____ duration BS >150(in minutes) _____
 Antibiotics redosing case >4h _____ case <4hours _____ date and time redose _____

FINAL VERIFICATION/ TIME OUT : LOCATION OR

Risk of blood loss >500ml N/A

Was antibiotic given within appropriate timeframe L: yes no, if no surgeon to order re-dose at 3/5 dose

TIME OUT completed and documented within 1 minute of procedure start

Fire risk assessment

prep solution has had 3 minutes to dry with no pooling of solution

Surgical site or incision above the Xiphoid	1	0
Open Oxygen source (mask/nasal Cannula)	1	0
Ignition source (ESU, laser, Fiber optic light)	1	0

Score 3 = High risk (Initiate High Risk Fire Practice)
 Score 2 = Low Risk w/potential to convert
 Score 1 = Low risk Score 0 = no risk
Total Score _____

Fire Risk Score Precaution Guidelines

Fire Risk Score "1" to "2" Precautions (mark all that apply):

- Observe prep drying time min. of 3 minutes
- Protect heat sources (cannery pencil holder, etc)
- Follow standard draping procedures
- Fire risk score equal to 2 low risk with potential to convert to a level 3 risk is, ET tube position, Surgical interventions in thoracic cavity. Convert to 3 high risk precautions.

Fire Risk Score "3" precautions implemented (mark all that apply):

- Titrate deliverable oxygen to 30% or below
- observe prep drying time (min 3 release)
- Follow appropriate draping protocol (i.e. incise draps)
- Use wet sponges
- Have basin of sterile saline available for suctioning prep site
- Have a 60ml syringe full of saline for procedure w/in oral cavity
- Protect heat sources (cannery pencil holder for electrocautery, will be steadily moist or use off heat source with fiber optic light source when not in use)
- Minimize electrocautery settings
- ECT (Electroconvulsive Therapy) remove oxygen prior to treatment

POST CASE DEBRIEFING/SIGN OUT PHASE LOCATION: OR
 Before patient leaves OR

Wound classification confirmed and documented

Foley to be DC'd yes _____ no _____ N/A _____

POST-OP:
 DRAINS:

PACKING

Surgeon:
 Picklist Procedure:

Suggestions for Improvement:

Picklist Change:

Circulator RN initials:

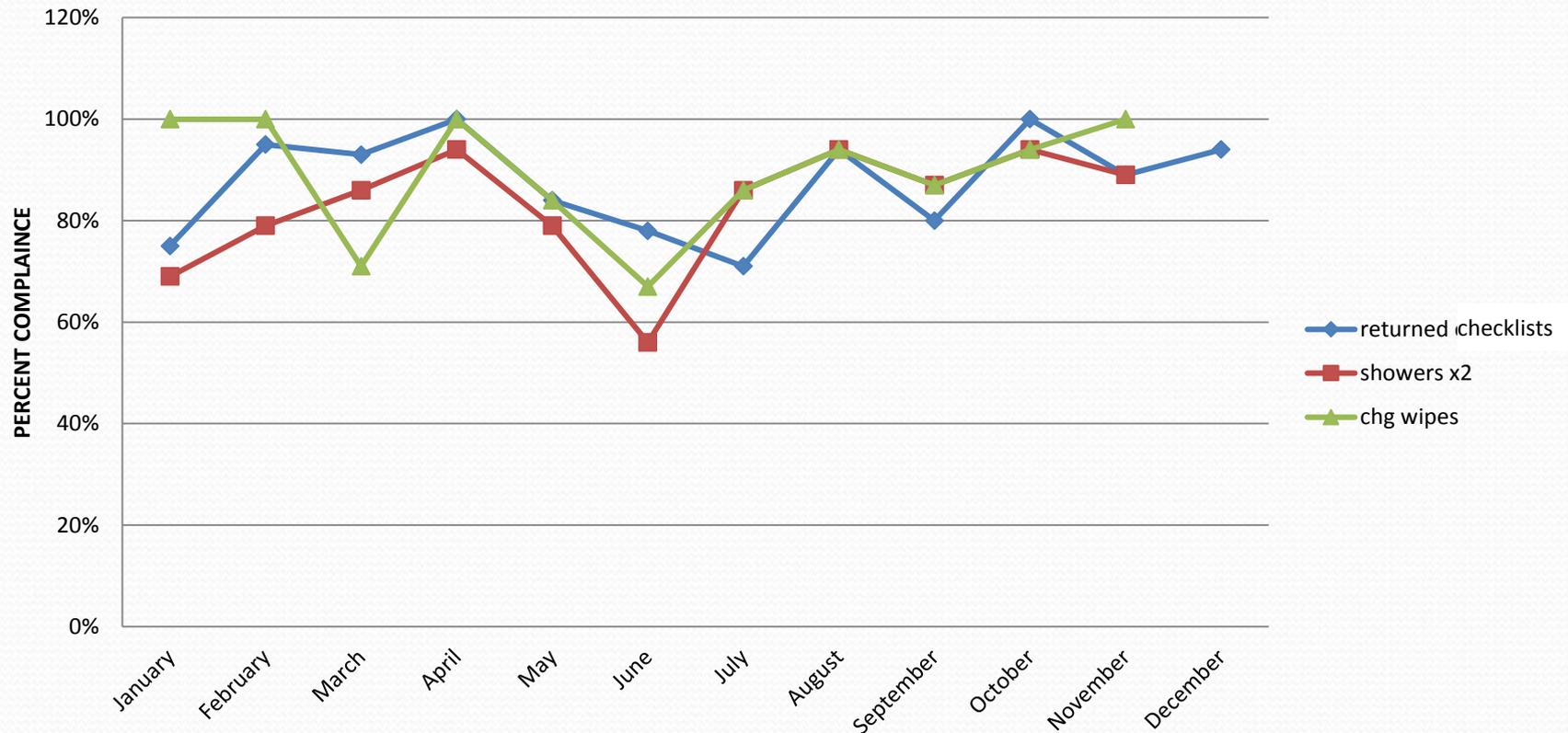
RETURNS THIS FORM TO CARDIOVASCULAR SURGERY/ DONNA DONALD-SHEAN RN/ NANCY GILYON RN, RYAN RAMALES RN [ECT] 263-2105

EVALUATION OF PROCESS

- CHECKLISTS AND TOOLS TO COLLECT DATA,
- OBSERVATION OF PROCEDURES
- ANALYSE THE DATA
- INFECTIOUS DISEASE MEETING/ MONTHLY STAFF MEETING.
- MAKE CHANGES AS NEEDED

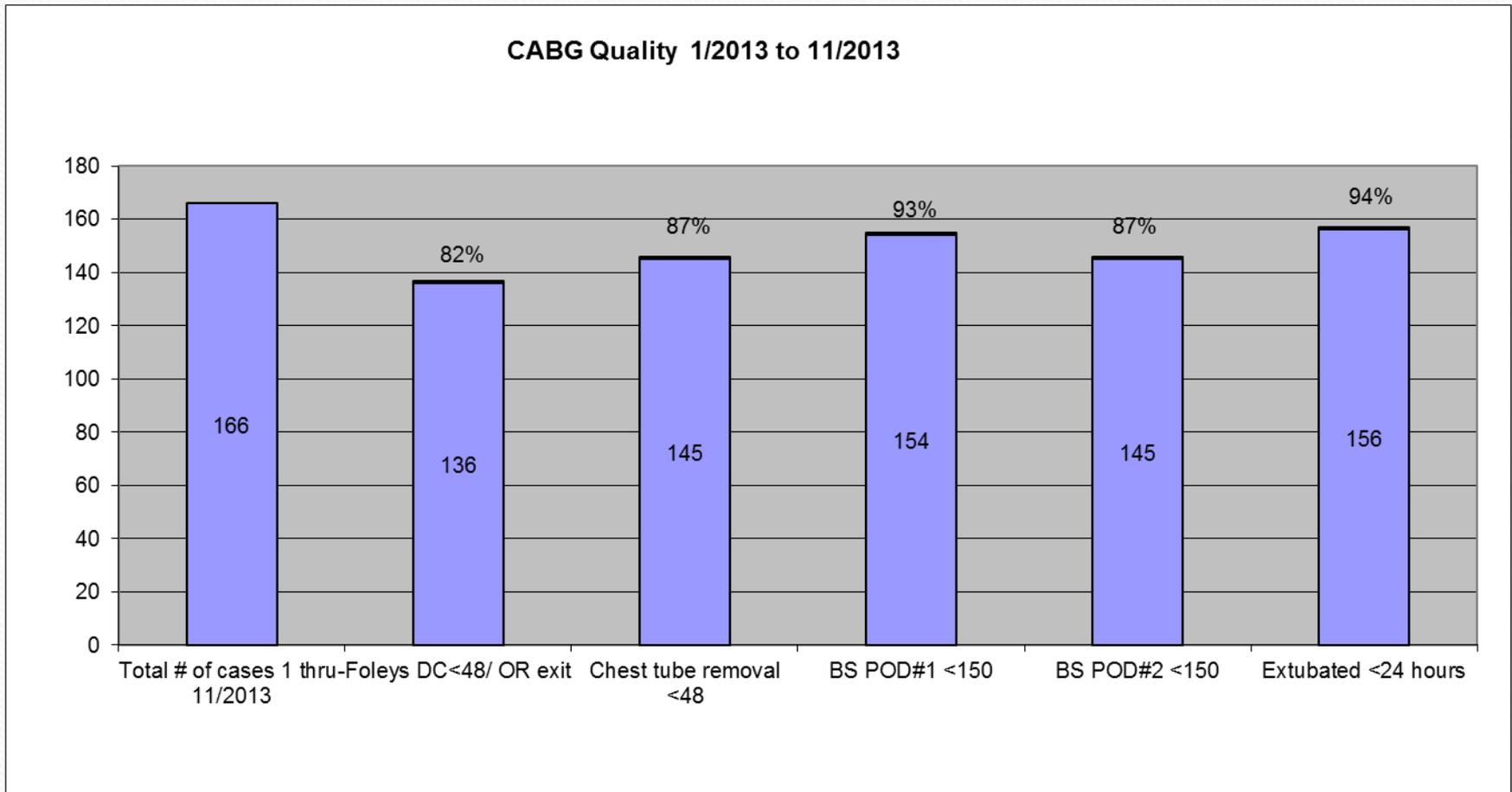
DATA FROM CHECKLIST

QUALITY MEASURES 2013



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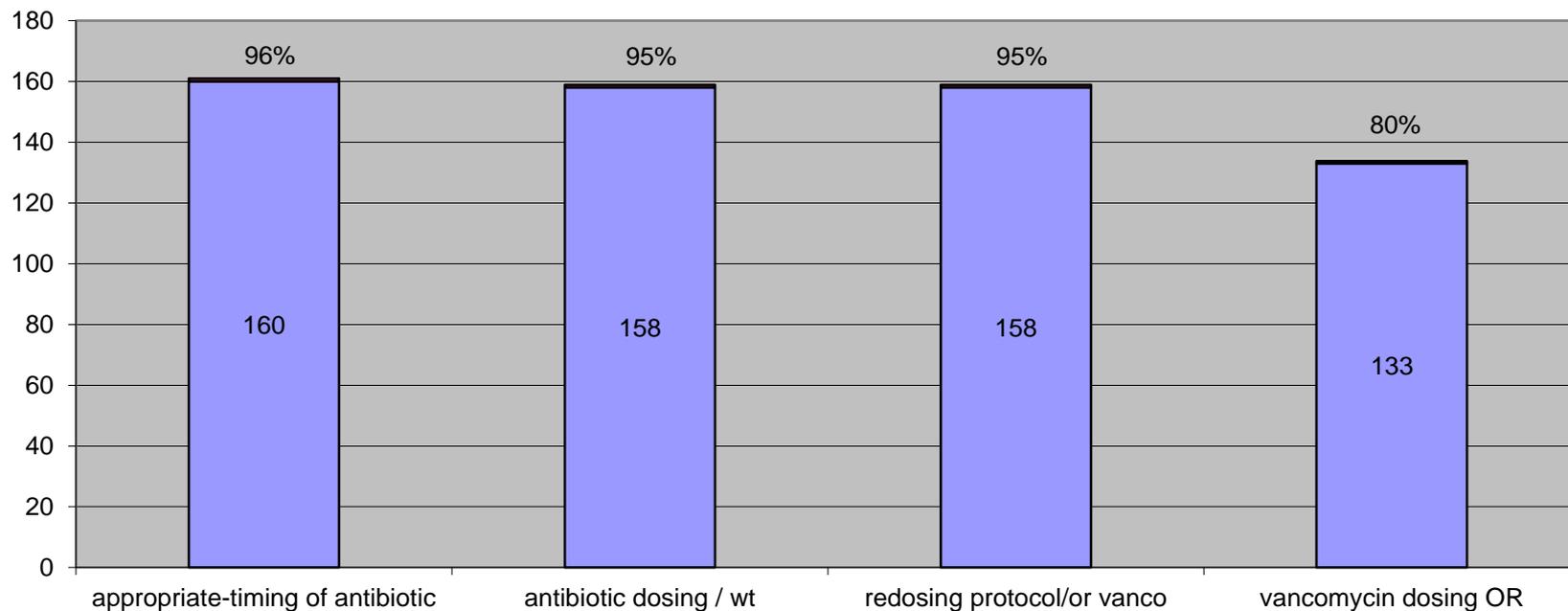
MONITORING QUALITY MEASURES



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APPROPRIATE ANTIBIOTICS

Antibiotic dosing/ timing Heart cases 1-2013 to 11/2013

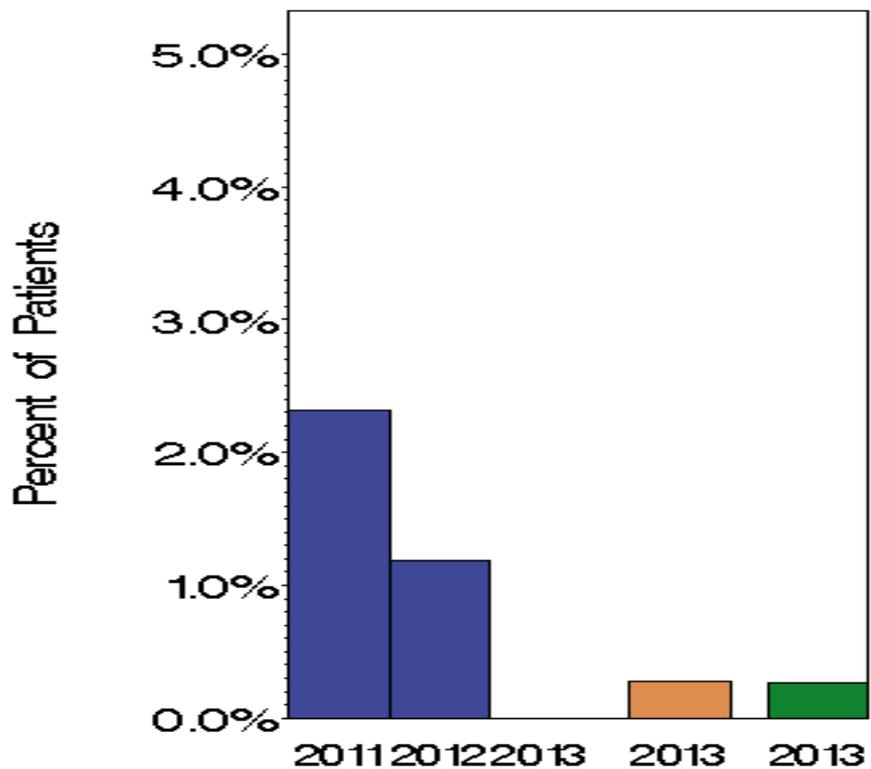


CONCLUSION

- WITH TEAM APPROACH AND USE OF PDA MODEL (PLAN, DO, ACT) WE HAVE IDENTIFIED MANY AREAS TO IMPROVE QUALITY OF CARE.
- LOOKING AT BEST PRACTICE MODELS: WE DEVELOPED PLANS OF ACTION, IMPLEMENTED, EVALUATED, AND REVISE THE PLAN AS NEEDED.

Deep Sternal Infx/Mediastinitis

Observed rate



Participant Like STS



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REFERENCES

- Infection Control and Hospital Epidemiology, 10/2008, vol. 29, supplement 1 ‘Strategies to Prevent Surgical Site Infections in Acute Care Hospitals.
- Infection Control and Hospital Epidemiology Vol.20 No.4 “Guideline For Prevention of Surgical Site Infection, 1999
- Infectioncontroltoday.com/articles/2001/04/preoperative-measures-to-prevent-surgical-site-infections “Preoperative Measures to Prevent Surgical Site Infections”
- Emerging Infectious diseases Vol. 7, No 2, March-April 2001 “Hygiene of the Skin: When Is Clean Too Clean?”
- Association of Surgical Technologists “Recommended Standards of Practice for Skin Prep of the Surgical Patient”
- IPS Infection Prevention Society (Royal College of Nursing) “infection prevention and control commissioning toolkit” (guidance and information for nursing and commissioning staff in England) review date March 2013
- <https://www.sts.org/sites/default/files/documents/pdf/Antibiotic.pdf>